

REMARKS

The present communication is in response to the Official Action mailed December 14, 2004. Applicants have amended the specification to delete a heading subsumed by the "Background of the Invention" heading. No claims have been amended; thus, claims 1-21 remain present in this application.

In the Official Action, the Examiner has rejected claims 1-5, 8-12 and 15-19 under 35 U.S.C. § 102(b) in view of Potmesil et al.; rejected claims 6, 13 and 20 under 35 U.S.C. § 103(a) in view of Potmesil et al. and Max et al.; and rejected claims 17, 14 and 21 under 35 U.S.C. § 103(a) as being obvious in view of Potmesil et al. and Foley et al. Applicants respectfully submit that the presently pending claims, and in particular independent claims 1, 8 and 15, are not anticipated by Potmesil et al. and thus, none of the dependent claims are likewise anticipated or rendered obvious by the combination of prior art references cited by the Examiner.

Potmesil et al. discloses the extension of traditional pinhole camera projection geometry in computer graphics to product a more realistic camera model that approximates the effects of a *lens and aperture setting* of an actual camera. This model allows the generation of synthetic images that have a depth of field and can be focused on an arbitrary plane. Potmesil et al. discloses that a focus processor generates a raster image from image samples and a pinhole camera model supplied by a hidden surface processor and, from given lens and aperture parameters, the raster image is focused and has a depth of field (see page 97, lines 1-3 in Section 3.2). Also, Figures 12-14 of Potmesil et al. show pairs of images that are generated by the focus processor from samples supplied by the hidden-surface processor. The images in each pair is generated by the same aperture setting but using different focal lengths (see, page 101, lines 1-14).

The rendering apparatus of claim 1 of the present application, for showing depth of field in an image, includes a Z buffer. The Z buffer establishes a depth direction of objects in an image. The rendering apparatus includes an image generator unit to generate an image in a just-in-focus state, a blurring unit to produce a blurred image from the image in the just-in-focus state, and an overwriting unit that can operate to selectively overwrite portions of the blurred image on the image in the just-in-focus state. The overwriting operation is performed by considering the depth direction of the objects in the image established in the Z buffer.

An example of the Z buffer is described in the specification at paragraphs [0049]-[0051]. For example, as shown in Figures 1B and 1C, when an object is closer to the viewpoint, the Z value of the dots or pixels that comprise the object is set to be large while an object that is further away from the viewpoint has a Z value of dots or pixels that is set to be smaller. In paragraph [0050], for example, it is described how a preset Z value can be used to generate and overwrite images with respect to one another based on a comparison of the Z values of the objects to a preset Z value.

As described in paragraph [0076], the use of a preset Z value determines the overwriting state of the blurred image on the just-in-focus image. For example, by setting an appropriate Z value, only pixels located further than a point represented by that preset Z value are overwritten. This allows production of images that are in the blurred state when they are located further than the border of the preset Z value.

Figure 7 shows an image in the just-in-focus state containing multiple objects which are far, intermediate and near from the viewpoint. Figure 8 shows this image being reduced to produce a blurred image from the image in the just-in-focus state. The result is the blurred image in Figure 9. As shown

in Figure 10, a Z value of the object located relatively nearer is preset, and according to the preset Z value, the blurred image (Figure 9) is overwritten on the image that is in the just-in-focus state. The processing is such that the image field of the object located further from the point represented by the preset Z value is overwritten, whereas the image field of the object located relatively nearer is not overwritten. The result is shown in Figure 10, in which multiple objects are displayed wherein and the object located relatively further is in the blurred state, and the object located relatively nearer is in the just-in-focus state.

The claimed invention also allows, for example, generation of a screen in which an object located relatively further away is displayed in the just-in-focus state and an object located relatively nearer is displayed in the blurred state. (See Figure 12.) In such a case, the overwriting is conducted such that portions of the blurred image are selectively overwritten on portions of the just-in-focus image.

By contrast to the present invention, Potmesil et al. only discloses images that are made by changing aperture and focal lengths. Potmesil et al. does not disclose any composite image that is made by selectively overwriting blurred images that are made from parts of an image in a just-in-focus state on the image in a just-in-focus state as called for in the claims. Further, Potmesil et al. does not disclose any overwriting operation by considering depth direction of objects in an image established in a Z buffer, as with the presently claimed invention. As such, Potmesil et al. clearly fails to anticipate the elements of claim 1. Namely, Potmesil et al. does not produce a blurred image from the image in the just-in-focus state and overwrite portions of the blurred image on the image in the just-in-focus state by comparing a preset Z value to the Z value of each of the dots in the Z buffer. Likewise, the

similarly related steps in claims 8 and 15 are not performed by Potmesil et al.

As Potmesil et al. does not anticipate the independent claims, the rejection of the remaining dependent claims as being anticipated by Potmesil et al. or rendered obvious in view of additional references should also be withdrawn.

As it is believed that all of the rejections set forth in the Official Action have been fully met, favorable reconsideration and allowance of the pending claims is earnestly solicited.

If, however, for any reason the Examiner does not believe that such action can be taken at this time, it is respectfully requested that he telephone Applicants' attorney at (908) 654-5000 in order to overcome any additional objections which he might have.

If there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

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Respectfully submitted,

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